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Atty Dkt. No.: 10981377-4  
USSN: 10/020,693

**REMARKS**

In view of the following remarks, the Examiner is requested to allow claims 37-43, 46, 47, and 49-77, the only claims pending and under examination in this application.

***Claim Rejections -- 35 U.S.C. § 102***

Claims 37-43, 46, 47, 49, 50, 52, 53, 56-58, 61-69, 71, 72 and 74 remain rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Takauchi *et al.* (USPN 5,453,333).

Claim 37 is directed to a method of modulating the flow of a fluid along a flow path of a micro-fluidic device. The flow path to be modulated is *within* the microfluidic device and the method involves modulating the physical state of a micro-valve that is positioned *within* the flow path of the micro-fluidic device. The micro-valve includes a phase reversible material that is stably associated with a high surface area component, wherein both the phase reversible material and the high surface area component are present *in* the flow path.

According to the Applicants' specification the term "micro-fluidic" device refers to "any device in which micro-volumes of fluid are manipulated along a fluid flow path." Additionally, a "flow path" is a pathway "through which fluid flows through the device." See paragraph 24. An exemplary embodiment of a "micro-fluidic" device and "fluid flow path," as claimed by the Applicants' is set forth in FIG. 1 below.

As can be seen with reference to FIG. 1, the micro-fluidic device is represented by element 10. Elements 12 and 11 are entry and exit ports, respectively. The device further includes a fluid flow path that is represented by the micro-channel 14. Additionally, the device includes a micro-valve 18 that is positioned within the flow path 14 of the micro-fluidic device 10.

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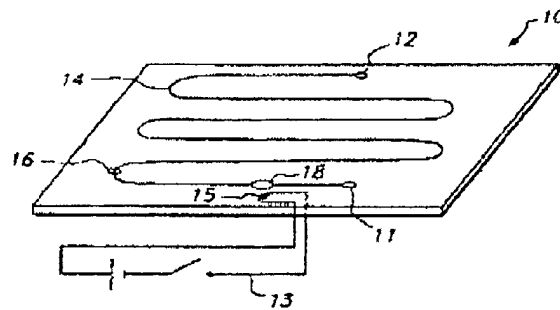
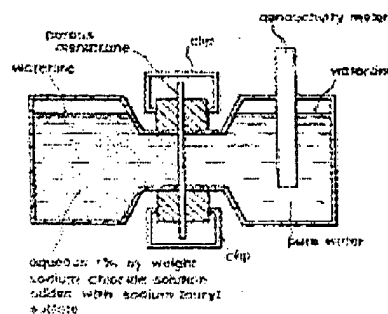


FIG. 1

The Office asserts that Takauchi anticipates the claimed invention and in support of this assertion, the Office points to FIG. 3 below.

FIG. 3



The Applicants respectfully disagree and contend that Takauchi does not teach every element of the claimed invention and that the assertions of the Office rely on two mutually exclusive definitions of the term "flow path."

In one instance, the Applicants have argued that Takauchi does not teach a flow path wherein both a phase reversible material and a high surface area component are present *in* the flow path. The porous membrane disclosed in Takauchi includes a first polymer forming a porous membrane and a second polymer that is positioned within the pores of the first polymer. The Office equates the first polymer membrane with the high surface area component claimed by the Applicants.

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Hence, the Office appears to be equating the pores in the first polymer of the porous membrane with the flow path as claimed by the Applicants.

However, if this is the case then the flow path in Takauchi is formed from a pore in the first polymer membrane, and consequently, the first polymer membrane is not present *within* the flow path. The Applicants, therefore, conclude that because the first polymer membrane is not present in the flow path, Takauchi does not teach a high surface area component *in* a flow path and therefore does not teach each and every element of the claimed invention. See the Applicants' reply filed May 15, 2006.

In response to this argument, the Office asserts that the flow path is not the passage created by a pore within the first polymer membrane. Rather, the Office asserts that the porous membrane itself is the microvalve and as such it is placed within the flow path between the left and right hand compartments of the battery. Hence, the Office concludes that because the porous membrane is within the flow path of the battery *en masse*, then both the first and second polymers are present in the flow path, thereby, allegedly, meeting all the elements of the rejected claims.

Under this interpretation, the Applicants have argued that Takauchi does not teach a microfluidic device through which fluid flows through a flow path. As shown in FIG. 3, the porous membrane is positioned within the fluid flow path of the opposite electrodes of a battery and a battery, as a whole, is not a microfluidic device. Specifically, for the battery of Takauchi to function properly the porous membrane, as a whole, would have to be configured to allow a large quantity of conductive electrolytes, e.g., ions, to flow from one compartment to the other (e.g., from one electrode to another). Hence, the battery of Takauchi is not configured for manipulating micro-volumes of fluid along a fluid flow path. As such, one of skill in the art would not consider the battery disclosed in Takauchi to be a microfluidic device. See the Applicants' reply filed October 18, 2006.

In response to this argument, the Office now reverts to defining the fluid flow path as the passage formed by the pores of the first polymer membrane. The

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Applicants, therefore, refer the Office to the reply filed May 15, 2006, and contend that if the fluid flow path is the passage created by the pores of the first polymer membrane, then Takauchi is deficient in that it does not teach a high surface area component that is *in* a fluid flow path.

The Applicants contend that it is inconsistent to argue that the same "fluid flow path" is defined as one entity in a first instance and a completely different entity in a second instance. Hence, the Applicants contend that the fluid flow path must either be 1) the path defined by the passage formed by the pores of the first polymer membrane; or 2) the fluid flow path must be the flow path between the left and right hand compartments of the battery *en masse*. If the former, then Takauchi is deficient because it does not teach a high surface area component that is *in* a fluid flow path. If the latter, then Takauchi is deficient because Takauchi does not teach a microfluidic device. In either case, Takauchi does not teach every element of the rejected claims.

In view of the above, the Applicants contend that Takauchi does not teach every element of the rejected claims and, therefore, does not anticipate the claimed invention. Consequently, the Applicants respectfully request that the 35 U.S.C. § 102(b) rejection of Claims 37-43, 46, 47, 49, 50, 52, 53, 56-58, 61-69, 71, 72 and 74 be withdrawn.

### ***Claim Rejections – 35 U.S.C. § 103***

Claims 54, 55, 59, 60, 73 and 77 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Takauchi *et al.* as applied to claims 37-43, 46, 47, 49, 50, 52, 53, 56-58, 61-69, 71, 72 and 74 above, and further in view of Hooper *et al.* (USPN 5,569,364).

As reviewed above, Takauchi is deficient in at least for failing to teach a microvalve that comprises a phase reversible material stably associated with a high surface area component wherein both the phase reversible material and the high

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surface area component are both present *in a flow path of a microfluidic device*. As Hooper has been cited solely for its disclosure of poly(N-isopropylacrylamide) as the second polymer, Hooper fails to remedy the deficiencies of Takauchi.

Accordingly, a *prima facie* case of obviousness has not been established because neither Takauchi nor Hooper teach all the elements of the rejected claims. Therefore, the Applicants respectfully request that the 35 U.S.C. 103(a) rejection of Claims 54, 55, 59, 60, 73 and 77 be withdrawn.

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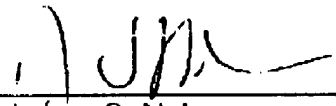
CONCLUSION

Applicants submit that all of the claims are in condition for allowance, which action is requested. If the Examiner finds that a telephone conference would expedite the prosecution of this application, please telephone Mike Beck at (408) 553-3864.

The Commissioner is hereby authorized to charge any underpayment of fees associated with this communication, including any necessary fees for extensions of time, or credit any overpayment to Deposit Account No. 50-1078, order number 10981377-4.

Respectfully submitted,

Date: 3.5.07

By:   
James S. Nolan  
Registration No. 53,393

Date: 3.5.07

By:   
Bret E. Field  
Registration No. 37,620

AGILENT TECHNOLOGIES, INC.  
Legal Department, DL429  
Intellectual Property Administration  
P.O. Box 7599  
Loveland, CO 80537-0599

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